OE Cam

AI: Explore the Possibilities
Go on Safari!

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Contents

AI: Explore the Possibilities Go on Safari!

Welcome to this edition of *The OE*.

Let's go on Safari!

AI is exciting new territory. Our innovation workshop enables leaders to explore the potential opportunities of AI for their organisation and understand the requisite talent needed to deliver on those opportunities. We argue that to successfully select and implement AI, leaders will need to adopt more of a 'design-thinking' change management approach. Such an approach focuses on the customer and rapidly moves from exploration to market testing; to get this right requires a new set of leadership behaviours and a brave new – more open - mindset.

To navigate the AI revolution, HR and senior leaders will need to work together to engage and energise their teams in the change. One of our contributors describes AI as a 'confined dragon' (do read on...); an almost mystical, powerful force to completely disrupt the way we do things.

With such uncertainty comes fear and opportunity in equal measure. Will we see the continued rise of the Knowledge Worker and unlock human know-how? Or will humans actually eventually lose the ability to make complex decisions?

We hope you enjoy this edition and as always, welcome the opportunity to discuss the key themes with you.

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MARTYN SAKOL
Managing Partner

Harness the Possibilities of Emerging Technologies

by **Merje Shaw**

There is a lot of confusion around what 'AI' means. Often, what is referred to as AI is simply 'machine learning'. Machine Learning is actually only one component of AI - deep learning combined with predictive analytics. See diagram 1 below.

DIAGRAM 1: Machine Learning is only *one* component of AI

The true breadth of Artificial Intelligence, as such, is yet to exist in the full, 'self-aware' sense as science fiction describes it - but there are many aspects of that exciting future state, that are already emerging.

Enabling smarter living

In our everyday lives, we are already benefiting from advances in this area, be it the clever search algorithms that mean you can find an answer to any question on Google (whether or not you spell it correctly) or the recommendation engine on Amazon that makes sure you buy batteries to go with your flashlight or shows you the most relevant content on Netflix.

Just coming into view is the powerful combination of the Internet of Things (IoT) and artificial intelligence within our homes which means that your new smart house has devices that talk to one another, learn your preferences and meet your needs before you even think of them. A great example of this is the Google Nest thermostat, which uses a camera to detect the presence of a person, learns from this data over time and then predicts when to switch the heating on/off according to occupancy.

> "... there is an increasing level of debate around what artificial intelligence means for work, in particular creativity and decision-making in jobs."

As well as impacting our home life, there is an increasing level of debate around what artificial intelligence means for work, in particular creativity and decision-making in jobs. To understand this further, let's take a look at how AI is impacting creative industries, like architecture and advertising.

AI is pushing boundaries in the workplace

Some of the world's most forward-thinking architecture studios are making excellent use of AI's predictive analytics and image generation capabilities. London-based practice Spacelab uses machine learning and virtual reality in order to visualise their architectural drawings in a very tangible way that also enables them to make changes to the structures in real time – something that was impossible before the advent of these technologies.

Machine learning, using systems like UpCodes AI, also allows architects and engineers to check their 3D models to detect potential material clashes, ensuring all legislative requirements are fulfilled and ensuring the building elements are correctly labelled.

In the world of advertising, 'programmatic advertising', where machine learning algorithms analyse visitor behaviour and optimize campaigns in real-time towards those visitors most likely to buy, is now commonplace. Classic examples of this include Google AdWords and Facebook whilst companies like Albert seek to utilise this approach across channels.

Elsewhere, AI is now used to generate film trailers, such as the one for the sci-fi horror film Morgan (1). It would have taken a human editor 10 – 30 days to complete the trailer, whereas the AI supercomputer 'IBM Watson' shortened this process to just 24 hours. Some of you may be aware that AI is already writing sports articles for the likes of Associated Press… (2)

In user experience, machine-learning algorithms are being used to customize the experience to the individual user, allowing for personalisation at scale – again, something hitherto impossible but now commonplace on platforms like Netflix.

Does this mean that humans are being supplanted by an intelligence that can work faster and more reliably than a human brain? Yes and No.

Continued overleaf...

The continued rise of the Knowledge Worker

John Smith, IBM Fellow and Manager of Multimedia and Vision at IBM Research, argues that adding machine learning capabilities to creativity actually augments it: "*With filmmaking, 99% of the work is actually very mundane. It's going through hundreds of hours of video in some cases to arrive at the core pieces to use. So there's still a very good reason to use technology as an assistant here, rather than replace the human in the loop.*" (3)

What we are seeing with current technological advances is not that human beings are being replaced by machines, but rather the human is freed from the more mundane and repetitive tasks in order to focus more on the non-linear and creative. This is happening across all sectors, not just the creative industries.

According to a McKinsey report from 2012, the average worker spends 28% of the working week managing email and nearly 20% looking for information internally (4). Whilst the percentages may have changed over the last few years, there is still a lot of time wasted on manually completing processes that could be streamlined using smart technology.

As more and more repetitive tasks are taken care of by machines, an increasing number of us are falling into the 'knowledge worker' category - where employees are required to use their knowledge, and ability to learn and increase this knowledge, to direct the technology at their disposal towards desired outcomes for the organisation. With the continued rise of the Knowledge Worker, we see a shift in roles that requires a vastly different skillset from manual labour. Communication skills, factual and theoretical knowledge, the ability to access and apply information as well as continuous desire to learn are becoming key skills in the job market.

Many larger, more established organisations are ill-prepared to foster a culture where these skills can flourish. For a knowledge worker to be effective they need to have sufficient flexibility in order to have time to think and, because they often think in new, non-linear ways, they need to be allowed to challenge the status quo – something that has previously been unthinkable.

So what can you, as a company leader do to adapt your organisation to these changes and explore how AI can benefit your business?

"With the continued rise of the Knowledge Worker, we see a shift in roles that requires a vastly different skillset from manual labour. Communication skills, factual and theoretical knowledge, the ability to access and apply information as well as continuous desire to learn are becoming key skills in the job market."

Be open to change…

First, accept that it is happening… In my opinion, there seems to be a lot of wishful thinking at the moment, with some organisations only now starting to acknowledge that the world of work is really changing. It can be hard to take a look at the bigger picture whilst grappling with 'business as usual' and when an organisation is doing well enough to sustain itself, the threat of disruption seems remote. One of the most famous examples of this happening is, of course, Blockbuster. You don't want your organisation to be the next Blockbuster.

Secondly, start challenging the firmly-held, limiting beliefs within the organisation. Simon Hayward, author of the book "*The Agile Leader*" (5) advocates that leaders need to enable their organisation around a clear vision and set of values, whilst at the same time seek to disrupt their business through these types of innovations. How to achieve the latter is explored in the article by Gary Ashton and Julie Brophy. One technique we advocate is carrying out a visioning or innovation workshop with your team. This demonstrates how new technologies and ways of working are already being implemented across the world by both startups and more mature organisations in order to explore your own future possibilities today.

Also some leaders I've worked with ruled out brilliant, game-changing ideas because they didn't work in the past. This can be a trap - more often than not, the idea was sound but the timing was wrong. A successful innovation programme captures all ideas and has in place mechanisms to revisit them in the future when they might be more easily incorporated and relevant.

Lastly, there is a need to be open – open to change, open to new ideas and open to new ways of doing things. We need to be continuously evaluating how we do things and why. Only when everyone in the organisation is clear on the why can they move forwards in the same direction - and AI can help us do this much, much faster.

> "there is a need to be open – open to change, open to new ideas and open to new ways of doing things..."

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Managing the Journey Towards AI:
How to Maximise the Benefits that AI has to Offer

by **GARY ASHTON & JULIE BROPHY**

Looking at the way the media reports the benefits offered by AI it is easy to believe that anything is possible… But with all this potential comes the challenge of identifying what is really going to benefit your organisation and your customers. And even when you have identified what you need, there is then the difficulty of implementation. How will your employees react to the introduction of AI? (which according to some reports is going to take their jobs away). How will it integrate with the retained legacy systems? Will it provide the benefits you want to realise?!

This article looks at how to use a ***design-thinking change management approach*** to equip your leaders and engage your employees to select and implement the appropriate AI for your organisation's future.

The AI opportunity

HBR's recent article 'Artificial Intelligence for the Real World' (1) identified three important business needs that AI can support: automating business processes (ABP), gaining insight through data analysis, and engaging with customers and employees.

The majority of AI opportunities currently being implemented are enablers that enhance the organisation's capability, capacity and productivity, providing business benefits by automating repetitive processes. This form of automation will take over some tasks, change or complement job roles, and improve business processes.

Meanwhile, AI's ability for cognitive insight significantly extends your capacity to analyse masses of data, images and speech. Examples of the benefits realised include deeper understanding of external customer's buying behaviour or internal insights into areas such as employee response to flexible benefit packages, and identifying the emergence of potential fraud and other risks.

Additionally, the ability to analyse and make use of the masses of data across the supply chain provides the potential for collaboration synergies with partners that can reduce product development cycle time, increase efficiencies in the supply chain, and allow for the development of innovative new products and services.

So with AI, there is a lot of potential to achieve significantly improved business performance. But when dealing with such a potentially massive change to your organisation and people's jobs, where it is unclear as to where you might end up, it can also be unclear how such change should be led and managed.

AI transformation: a 'design thinking' approach

At OE Cam our change management principles for digital transformation, including AI, are based on 'design thinking', mirroring the approach often used in AI and software development.

Design thinking is an approach that focuses on developing a deeper understanding of customers' wants and needs and then moves quickly from exploration to insights and then to testing directly with the market. Rather than waiting until new products and services have gone through numerous test and modify cycles, beta versions of the products are launched and customers in the real-world environment do the testing. Their feedback is then used to make modifications to functionality.

In applying design thinking to how you manage the digitalisation or introduction of AI into your organisation, there are three key themes to consider:

1. Empathy to drive inspiration – This phase is about spending time to define the opportunity provided by AI or the problem that needs to be overcome. By really empathising with the customer and recognising their psychological and emotional needs the organisation can develop a deep understanding of what issue they should be addressing through AI.

In a change management situation, as well as developing an understanding of its external customers, the organisation also needs to work to develop the same depth of understanding about their own employees, as they are key to implementing and interacting with the AI. The inspiration phase should include a real commitment to communicating with employees as internal customers, finding out what they:

- understand are the reasons for the change
- want and need from the change
- believe the impact of AI will be on their work
- feel about the change.

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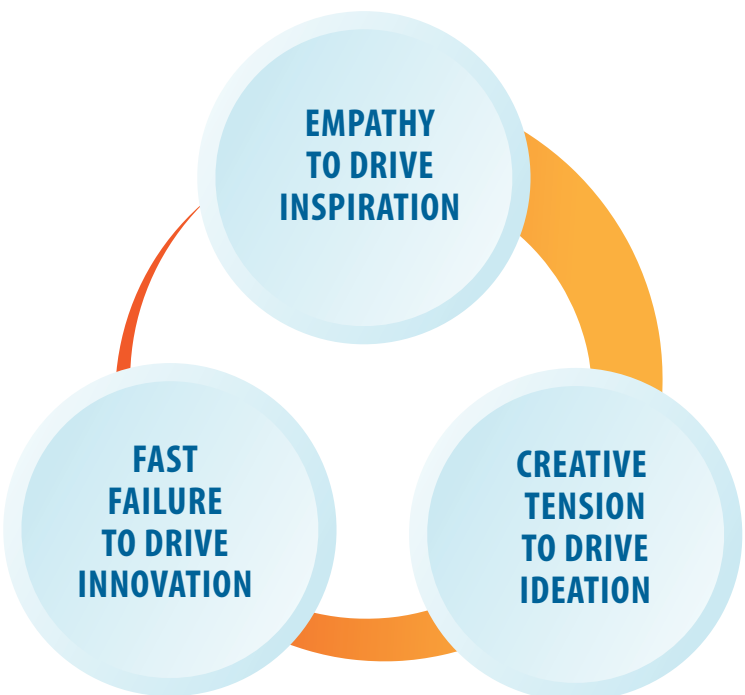

DIAGRAM 1: The three key themes of design thinking

2. Creative tension to drive ideation – During this phase organisations have the opportunity to explore the art of the possible. From a change management perspective, this ideation phase will be most effective when a diverse group of stakeholders are involved. As Rosabeth Moss Kantar said '*Change is disturbing when done to us, exhilarating when done by us*' (2). To increase employee engagement and ensure that an organisation-wide view is developed, ideation should be undertaken with cross-functional teams.

Starting with divergent thinking, the team fully explores where they can take the organisation without paying attention to any current constraints or considerations. In this phase the team needs to be comfortable with dealing with differing views and opinions being raised, and allow the creative tension between different team members / functions to fuel the development of more innovative ideas.

Understanding the full potential of new technology and AI can be so enormous for some organisations that they don't know where to start. One practical way to begin is to gain hands-on experience by undertaking an 'innovation workshop', as discussed in Merje's article on page 5. This takes the client on a virtual field trip to explore the art of the possible by learning about the inner workings of new technology firms and also of mature firms who have already implemented new AI technologies.

Once the unbounded creative thinking has developed a range of possibilities, honing in on the opportunities that deliver the aspirational business and defining a new vision will require a more convergent mind-set. During this phase the organisation will look at how AI and other technologies are being used in the market, and narrow down the options to identify the technologies and AI that will make the vision a reality.

This divergent / convergent cycle is an iterative process. Seeing what is available and what can be achieved may bring into question the organisations' refined vision and so the cycle is often repeated until there is agreement that the correct solution has been found.

Working with employees to develop the requirements of the AI and involving in them in the exploration of the technology landscape will require them to invest time and emotion in the organisation's future and increase their desire to support its implementation.

Gathering a broad range of views will also help ensure that what is implemented will be fit for purpose and to a certain extent, future proofed.

3. Fast failure to drive innovation - A key difference in design thinking, as opposed to more traditional methods of change management, is the concept of agile implementation through prototyping. In practice this often means implementing an early prototype of a software module or set of AI functionality. Customers in a real environment do the final testing, the feedback and intelligence they provide is then used to make further modifications.

From a change management perspective this stage offers the opportunity to exhibit a truly learning culture. It will require an environment where failure is allowed and does not negatively impact employees career development. For organisations not used to this, the language used may therefore need to change to reflect and reinforce a learning culture.

A lot of writing on design thinking stops at this point, but from our experience we know there is an additional fourth change management principle that is essential for successful implementation:

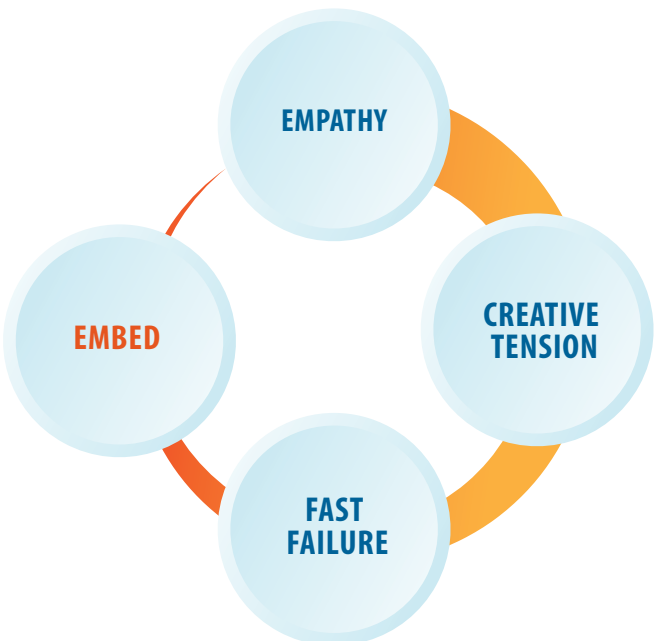

DIAGRAM 2: OE Cam's extended approach to design thinking for successful change

4. Embed to drive sustainable delivery – the opportunities AI provides will continue to expand, and things not currently imagined will soon become possible. As a result, the organisation will need to continually change, in order to respond to their markets and the demands of their customers. To benefit from future advances, leaders will need to embed a culture, structure, processes and ways of working that will enable it to stay close to its customers; regularly reviewing its strategy, learning from and swiftly adapting to customer feedback.

If the ideas are radical enough, it could even mean designing and piloting new operating models to co-exist alongside the incumbent business model. In this case, the focus needs to be on providing clarity on how the new approach will be implemented and evaluated. The change will also require acceptance from the firm's leadership that a different set of KPIs for the core business might be needed to measure the success of the AI opportunities.

Leading to maximise the benefits of AI

To effectively introduce and benefit from this design thinking approach to change requires a specific set of leadership behaviours. These will differ as the organisation progresses through the phases described in the previous section.

During the inspiration and ideation phase, what the organisation's vision and aspiration will look like and the changes needed to deliver it, will remain unclear. So leaders will need to be brave, trust in the process and allow the future to unfold. They will need to get used to not always being able to clearly define the future but still provide the compelling story about the need for change.

Leaders can be valuable contributors to the team driving the discovery phase. They should empower the team(s) to test boundaries and challenge the status quo. As well as creating the right creative environment to explore the art of the possible, empowerment will engage employees with the change and reduce the fear of the unknown that AI can represent.

> "...leaders will need to be brave, trust in the process and allow the future to unfold."

During the implementation and prototyping phase it is likely that there will be numerous iterations of the testing-modification cycle and time when what has been developed or implemented does not work as well as expected. Leaders must truly embrace a 'learning culture' to benefit from this agile prototyping approach and work with their employees to identify and quickly rectify issues. Leaders may not know what the answers need to be but instead allow them to be developed from the bottom up, encouraging employees to own and develop the solutions.

Conclusion

AI offers organisations enormous potential to change the way work is carried out, how they manage their supply chain partners, the products and services they offer and how they interact with their customers both internal and external. However, with so many possibilities it can appear an almost impossible task to identify the approach that will position to organisation to benefit from the new technology.

OE Cam's design-thinking approach to change management can help organisations to drive: empathy to inspiration; creative tension to ideation; fast failure to innovation and a new culture for sustainable delivery. This approach also introduced the very practical step of undertaking an inspiration safari and highlighted the role that leaders will need to play in order to maximise the business benefits that AI can deliver.

If you would like to learn more about this approach to exploring AI opportunities, please contact Gary Ashton or Julie Brophy.

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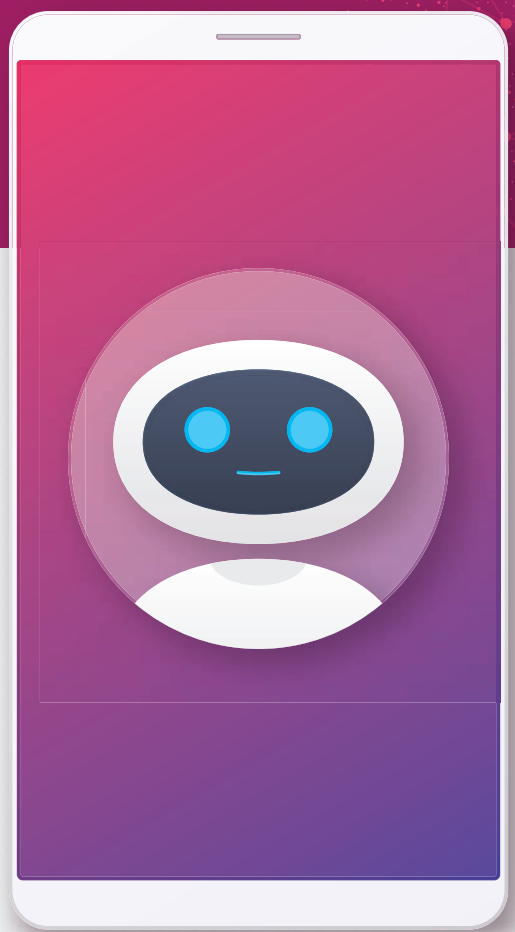
‘I, not Robot’

by **HAZEL MCLAUGHLIN & MARIAM MIRZA**



Rise of the Chatbot

Isaac Asimov’s Three Laws of Robotics (1) state that “a robot may not injure a human being or, through inaction, allow a human being to come to harm. A robot must obey orders given it by human beings except where such orders would conflict with the First Law and a robot must protect its own existence as long as such protection does not conflict with the First or Second Law.”

Science fiction and popular culture has given us one perspective on the potential impact of Artificial Intelligence in our human world; this tends to marvel in the sophistication of technology usually sparking a sense of fear and dread around a loss of control and technologies that we do not truly understand. As a result, some of us can be hesitant to embrace new technologies and are suspicious of how quickly technology advances.

“AI means I will lose my job”

“The workforce will become millions of robots and drones”

“I just want to speak to a real person!”

“AI is far too intelligent and will supersede humans”

“I’m not going to see any of this in my life time”

AI in 2018 sees the rise of chatbots, Snapchat (2) glasses, drones taking aerial photos of your birthday party and shopping stores with no checkouts at all - as demonstrated by the Amazon Go store in Seattle USA (3). Taking the Amazon Go example, sensors within the store and an App are used to track what customers take off the shelves, what they put back and their credit card (stored on file) is charged at the end of the shopping trip. This takes hassle-free shopping to a new level.

Delving into the direction technology can take, Harvard Business Review (2018)(4) distinguishes three areas that we expect to see more of as a result of AI and its rate of progression…

1. **Process automation** - these types of tasks are described as "high volume, low complexity" routine admin activities. In today's world this could include the technology used to track your parcel or being used to correctly identify a customer call and lead them to relevant department/operator.

2. **Cognitive Insight** - this is described as technology recognising patterns in data or algorithms. We commonly see this when our online browsing collects cookies so that store websites predict what we would like to buy based on previous online searches. When watching a YouTube video we find that a pair of shoes similar to the ones you looked at the other day is being advertised in the corner of the screen…

3. **Cognitive engagement** - using intelligent agents, cognitive engagement focuses on the way robots can move autonomously and more importantly, how they can collaborate with humans. Driverless cars showcase how robots, data, algorithms and sensors interact with other cars on the road to navigate safely through traffic.

If we look at the statistics, 30% of tasks in 60% of occupations could be computerised (McKinsey and Company 2017) (5) and statistics like these make people fundamentally question their purpose in the workforce.

Aiming to clarify these worries, data analytics can identify the likelihood of AI replacing a job. Using this software (6), research shows that jobs likely to be replaced by AI might be Retail salespeople (92% likely to be replaced), machine operators (62% likely to be replaced) and administrative services managers (73% likely to be replaced) to name a few examples.

The same data set indicates that jobs which are least likely to be replaced by AI might include Pharmacists (1.2% likely to be replaced), Human Resource Managers (0.5% likely to be replaced), and Public Relations Managers (0.5% likely to be replaced) to name a few examples.

On the other hand, there is a compelling case that AI has the potential to create more jobs than losses. According to reports from PwC (7), by 2037 AI looks to generate 200,000 new jobs, particularly in healthcare, science, education and even professional services sectors. This same report highlights that whilst London will see a boost in jobs generated, East Midlands is expected to see a reduction in jobs. However, this output is based on data that we know of right now and the reality is that we don't know how far AI will change the workplace. This means that the types of jobs that will be available in the future is unclear. What is clear however is the focus for organisations should be on executing successful change management and effectively dealing with how people cope with the change.

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> This means that the types of jobs that will be available in the future is unclear. What is clear however is the focus for organisations should be on executing successful change management and effectively dealing with how people cope with the change.

OE Cam has significant experience working with organisations from a variety of sectors to design, develop and implement successful change management. We help managers understand that not only are humans still a valid member of the workforce, but with AI comes new opportunities and better ways of working: faster processes, greater accuracy, less bias, the opportunity to develop and learn new skills as well as more opportunities to collaborate.

New ways of working in Human Resources

AI will cluster the workforce into two; people who design the technology (train, explain and sustain its use) and those who will work with the technology on a day-to-day basis. As such, AI will impact the job design of both clusters of people including their job description and role specification at the very least.

For organisations it means revisiting their talent framework. For some, this might mean dividing work roles into three distinct areas:

1. Solely human components of the job
2. Solely technology-based components of the job
3. Components that combine human and technology

Once these three areas have been established, job details can be defined by working with digital IT teams to explore questions such as:

- How will technology be used?
- Who will use the technology?
- Who will the job holder have to communicate with?
- How easy is it to communicate with these people?
- Where will job holder be located and how much travel is involved?
- Who does the job holder now report to/who reports to the job holder?

With respect to navigating the change with as little negative impact as possible, HR plays a critical role in effectively communicating with the relevant people how jobs and day-to-day tasks will change. With this, HR should ensure that the time is taken to listen to and support those individuals. In doing so, the organisation is positioned as supporting its people, which ultimately reduces negative impact as much as possible and limits the number of grievances reported. HR also has a significant role to play in developing the frameworks and processes to support people as job roles change. There is a need to listen, to support others and to fully appreciate why people worry about the impact and the change. HR can help people to see the positives and the opportunities that these now roles will provide. This would enrich and encourage people to fulfil their true potential.

What can Senior leaders Add?

The fast pace of digital means that change is inevitable and the future is not certain. Therefore, agile leadership has become important and leaders have to shift, to adapt and modify behaviours depending on the prevailing conditions. In its more flexible form, the focus is on results and outcomes and the right leader is chosen by the team, which is in contrast to the leader driving the process and making the decisions. This is a more collaborative and structurally fluid approach.

AI also impacts the way in which power is distributed. Technology can bear some of the responsibility for the leader, meaning that leaders can dedicate more time to invest in developing their people.

Overarching these changes is the need for a leader who embraces the change that AI brings and drives it forward. Common leadership skills and behaviours that are considered to be effective in navigating through this change include, but are not limited to:

- Openness to develop innovative solutions
- Has a vision for the future
- Champions ideas
- Persuades and influences others to gain buy-in
- Encourages cross functional working
- Supports, motivates and inspires others
- Adopts a "growth mind set" and encourages others to do the same
- Agile and adaptable; flexible thinking style and way of working
- Willing to experiment and trusts their team to do the same
- Identifying talent and actively develops others.

In this way senior leaders can energise their people and drive success.

What is the Impact on Teams?

With new technologies comes remote working and as a result, teams are composed of individuals from across different functions of the business or/and all around the world who have to work together effectively. The biggest challenge most teams face with this new way of working is to keep people motivated.

The Red Balloon Challenge (8) that took place in USA in 2009 highlights how team motivation has changed now that technology has expanded the web of social relationships. This challenge asked teams to locate the GPS coordinates of 10 red balloons that were at fixed points across USA. The first team to collect the coordinates for all 10 balloons received a $40,000 prize. 4,000 teams entered the competition. The most common strategy amongst the teams were to reach out to people across the country on social media and other internet databases. However, there was one group of MIT students who took a different strategy and were able to locate all 10 balloons in only 8 hours and 52 minutes:

They decided to use financial incentives to motivate people:

- $2000 was given to the person who submitted the correct balloon co-ordinates
- $1000 was given to the person who invited the above individual to the challenge
- $500 was given to the person who invited the inviter
- $250 given to... so on and so on.

This example highlights that if we want to drive forward initiatives, leaders need to understand that cross-functional and/or remote working is no longer considered a hindrance to team effectiveness if each team member is given the relevant responsibility, accountability, reward and recognition.

Continued overleaf...

> "agile leadership has become important and leaders have shifted to adapt and modify behaviours depending on the prevailing conditions..."

Individuals

Change is constant and all around us; take the retail sector for example, five years ago we would not have seen a potential merger between two competitive supermarkets - Sainsbury's and ASDA. OE Cam works with organisations to not only look at the change process but look at the people elements surrounding this change. It is vital to recruit the right people into roles in order to get the best out of them as well as coach and develop people throughout the change process.

In a recent example, we worked with an organisation that has restructured their whole business. The consequence of this being that individuals are now working with a wider group of people and working in a different way.

OE Cam worked with these individuals by coaching them to think more broadly about their role and think differently about how they interact with people in order to bring the best out of the whole team.

The implications of AI for the individual can focus on the emotions, feelings and experiences when dealing with changes AI brings to the workplace. As a result, the need to understand and practise emotional intelligence is now more important than ever. Change incurs different emotions in different people and we may not all deal with it in the same way; with some people being more resilient than others.

With change can come confusion, worry, fear and feelings of losing control therefore, it is fundamental for individuals in the workplace to not only recognise their own emotions, feelings and behaviours and how this might impact others but also be vigilant to the emotions and behaviours of others.

New ways of working means that traditional forms of motivation like the carrot and stick approach may be less effective. Instead, individuals should be encouraged to explore what motivates them and share this with their managers. As a basis, Dan Pink (9) offers three elements to successfully motivating others: ensuring the work has purpose, ensuring the individual is given autonomy (allowing the individual to make decisions for themselves) and ensuring that the time is dedicated to developing the individual mastery. Similarly, models such as the "Job Characteristics Model" (10) (Hackman & Oldham (1976/1980) also identify that skill variety, meaningfulness of work and autonomy lead to greater motivation and greater work performance. OE Cam has worked with organisations to deliver creative workshops around dealing with change, understanding emotional intelligence and being resilient. Recently we have worked with teams on this area within a fast-moving organisation so that they were able to appreciate their own style, to enhance their approach and to achieve better outcomes, equipping them to face the challenges ahead.

The Way Ahead

So what does this all mean for AI in organisations? Undoubtedly there are challenges as new avenues open up with AI. However, it also presents significant opportunities to be faster, better and ahead of the curve. It can give that competitive edge that makes the difference. So 'I Not Robot' is so true. Humans are unique and different and can add an understanding of people and emotions into the mix. We are not machines but working with technology we can be better than before. The challenge is there for each and every one of us and our organisations. Let's embrace the potential, make the most of AI and reach out for the brave new world.

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Riding the AI Dragon to Success

Embracing the Potential of AI whilst Avoiding the Pitfalls

by **MARK WOODS**

It seems like every week now we hear new stories about how some form of AI, or more precisely a specific type called Deep Learning (DL) will revolutionise the world around us in the form of self-driving cars, healthcare diagnosis, automated trading or hyper personalised marketing. There is no question that we are in the midst of a fast-moving technological revolution which presents a host of new opportunities for those able to act fast but also, beyond the bright headlines, a set of challenges which must be overcome if its promise is to be upheld and realised.

At their simplest, Deep Neural Networks (DNN's) which realise DL advances do one thing well: they approximate or model the relationship between a very large number of inputs to a typically smaller number of possible outputs in an efficient way. Often that relationship is complex or non-linear which makes it impossible to model using traditional algorithmic approaches. Mapping large numbers of inputs to possible outputs allows us to capture the relationship between items of interest we may find in digital content and some form of meaningful classification. For example, we might wish to classify objects we find in digital images, so in that case, the inputs are pixels in the image and the outputs are classes of things – e.g. person, cat, dog, table etc.

Continued overleaf...

Unrivalled Ability to Learn

The key thing is that DNNs typically learn this relation or mapping between pixels and possible classes from a large set of labelled, image examples. If trained well, the network can then generalise what it has learnt and predict the content classes of images it has never seen before with a high level of accuracy. This ability to learn from large volumes of labelled data and generalise well with images "in the wild" is what can set DNN's apart from other computer vision techniques and previous incarnations of neural networks. This is interesting when you know that in 2017 alone approximately 1.2 trillion images are estimated to have been produced which is emblematic of the vast quantities of digital data being generated more broadly. It would be impossible to write a rule or standard computer vision-based set of programmes to robustly label these images at this scale given the variety diversity of their content. It is clearly inefficient for human labellers do to such a task given that it may take several minutes per image and consistency is extremely difficult if not impossible to achieve.

What is also interesting is that DNNs have been shown in recent years to outperform human labellers in terms of accuracy on certain tasks such as image classification. Not long ago, the prevailing view was that such tasks required unique human skills which could not be matched by computer techniques. This is of course a narrow achievement as there are many more vision challenges to be addressed but coupled with the fact that DNN's can process data at orders of magnitude faster than human labellers and with greater consistency raises the prospect of a huge advance. We are now able to draw up to real-time insight from the world around us be it physical or virtual. Going further, the quality of the outputs gets better as we obtain more data and retrain or fine-tune our DNN models. Critically, we can also uncover previously unmapped relationships between classes in our data which can provide a whole new level of actionable insight.

> "In addition to straight-up task productivity, consistency and efficiency gains there is a potentially more important outcome and that is in unlocking the know-how of our human capital."

The Real Opportunity: Unlocking Human Know-how

Taking a step back this has the potential to make a profound impact if we can learn to fully exploit this opportunity. For example, consider a single DNN based MRI assessor which consistently provides first-tier analysis or anomaly detection outcomes for all MRI's in the nationwide NHS network in near real-time. Its not hard to imagine the positive impact this could have on diagnostic variability, improving the consistency of outcomes and overall NHS efficiency and cost.

In addition to straight-up task productivity, consistency and efficiency gains there is a potentially more important outcome and that is in unlocking the know-how of our human capital. Consider for example a recent development SCISYS have been working on where we have produced a system which can classify the content of high resolution terrain maps. Currently, a handful of experts spend months on a first-tier analysis task which is extremely challenging given the scale, number of resources available and hard deadlines which often apply.

It also acts as a bottleneck which can delay higher level strategic analysis phases. The results from this first-tier analysis can now be available in minutes depending on the configurations we use. This allows these experts to focus on their core competency and interest which in this instance is understanding Mars and guiding its exploration. By using the results from the analysis output they can gain and act fast on strategic insight in ways which would not have been possible previously.

In another example SCISYS provides DL based systems which can label defects from tunnel environments in fraction of the time it takes a team of human experts to carry out. This could be carried out at a network level – simultaneously generating condition reports at large scales in orders of magnitude less time. Once again it brings a level of consistency that can be applied to all instances and filters out the variation in performance. This allows the expert team to focus on strategic insight and planning and ultimately to achieve significant performance improvements.

Such examples highlight key advantages of AI namely – augmenting the capability of human capital and repurposing those experts to address higher order tasks. Staff Repurposing to insight centric work, cognitive Augmentation coupled with Productivity at a task level through automation are at the heart of the DL revolution and its potential to bring about significant change.

DL: a Confined Dragon?

However, using such powerful algorithms for high-level functions, where they impact or disrupt existing operations and strategy can be like introducing a technological dragon to a confined space. There are many roadblocks in achieving such gains which also makes it difficult for those who are entering the field and hoping to exploit its potential. Foremost among this is the need to educate and gain acceptance with those impacted by it, establish/ensure trust in the technology, and access appropriate but scarce expertise. Recent incidents in the automotive sector have highlighted the human and potential reputational/brand risks associated with deploying such complex technologies in shared environments. Thankfully though we can take advantage of lessons learnt and best practice from early use and adoption of AI in other industries.

Continued overleaf...

“... key advantages of AI namely – augmenting the capability of human capital and repurposing those experts to address higher order tasks. Staff Repurposing to insight centric work, cognitive Augmentation coupled with Productivity at a task level through automation are at the heart of the DL revolution.”

For over 15 years the SCISYS autonomy and robotics group has led the introduction and development of AI based technologies for the European Space Agency's ExoMars rover mission to Mars. This robot will autonomously explore the surface of Mars whilst searching for signs of life.

In recent years we have successfully transferred this know-how and our IP to industrial inspection applications in other extreme environments here on Earth. For space missions in particular and remote inspection in general the trust and confidence bar has been set extremely high. Onsite maintenance and repair is not an option on Mars or some remote environments should we have problems with our autonomous control systems. It is therefore critical that the entire range of mission stakeholders have trust in the technology from mission directors through to tactical operations staff responsible for rover well-being during live ops. We have been able to engender trust by creating and executing dedicated but extremely challenging technology trials accompanied by hands-on educational activities which allowed stakeholders to become comfortable and take advantage of what the technology had to offer. As one trial director noted:

"I was very concerned about the inclusion of the AI Autonomous Navigation Component fearing that it would add unnecessary operational complexity, increase our workload and potentially endanger the mission … but it after a few days we realised that it did exactly what is was supposed to do allowing us to focus on the strategic planning, extracting insight and make much faster progress. In the end we just forgot about it as it worked in the background."

In addition to the educational and trust work, we have created a new approach to the validation and verification of autonomous systems to help minimise the risk of the kind of incidents seen in the automotive industry. Given the fast-paced nature of the AI revolution there is a high degree of constraint free development being adopted at present, but AI is a powerful tool and if not developed and deployed correctly it has the potential to inflict serious damage – either physical or reputational or both. Fortunately, techniques and expertise from mission critical industries such as Space can be adopted to address this challenge as part of an overall customer led process for deployment.

Conclusion

We are at the cusp of an exciting future enabled by AI and robotics technologies. Significant gains await in the form of Repurposing, Augmentation and Productivity (RAP) for those enterprises who are able to carefully introduce these complex technologies in a meaningful and managed way. Engaging and collaborating with established and experienced entities such as SCISYS who provide the requisite expertise and production level diligence specific to AI solutions. This will both enable and "chaperone" the introduction of this level of change whilst minimising adverse consequences allowing the smart enterprise to ride the dragon to a whole new level of success.

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RAP: Organisational Consequences

by **GARY ASHTON & HAZEL McCLAUGHLIN**

The potential of AI on any organisation for Repurposing, Augmentation and Productivity (RAP), allows the leaders to act differently and to reimagine both the aspirations of the business and how the organisation is designed to deliver on those aspirations.

The potential organisational consequences are four-fold:

1

Individual - From jobs to capabilities

Jobs are changing and this means different capabilities. The augmentation of tasks through AI, allows people to be more creative and undertake more 'insight centric' work, this will mean a change in how people define what they are there to do. This is a shift in people's roles so it is less about traditional job descriptions with specified tasks, and more about capability sets and levels of decision-making authority. This is already having an impact in diverse areas such as designing new buildings to the way in which law firms work. This enables the organisation to rapidly shift the focus of individuals to deliver new sets of objectives as and when required.

2

Teams – From managed teams to autonomous cross-functional teams

To release the creative potential of individuals whilst ensuring that they still build practical solutions that the organisation can deliver will mean the use of more autonomous cross-functional teams. This provides the opportunity for trade-offs to be considered and these trade-off to be made at pace. This is already happening in technology-based companies with new team structures (e.g. Spotify).

3

Leaders – From control to letting go

The way to get the most out of these teams will require leaders to shift from the more traditional control of tasks and people towards greater focus on the vision and values of the business, and providing the context and objectives for the employees to innovate and deliver. Leaders will act through and with others and the boundary between the leader and the teams will be less clear. This is starting to take place more frequently as organisations delayer and reorganise to remain competitive. There are many examples across retail, logistics and transportation and the supply chain.

4

Organisation – From managing today to increasing productivity and developing tomorrow

The opportunities for productivity gains through AI, combined with redefining how people work by AI augmentation, trigger more cross-functional working that can result in the need to reimagine the operating model of the business on how resources are managed and how decisions get made. Speed of response is critical and new operating models support end to end business processes. This enables businesses to operate more efficiently and enhance profits and margins. This works for organisations across sectors including re-imagined retail and technology providers.

It is critical for leadership teams to address not only the technological advantages of AI but also grasp the organisational consequences to enable the realisation of AI's potential. OE Cam works in partnership with our clients to deliver solutions across all four organisational areas.

To find out more contact gary.ashton@oecam.com or hazel.mclaughlin@oecam.com

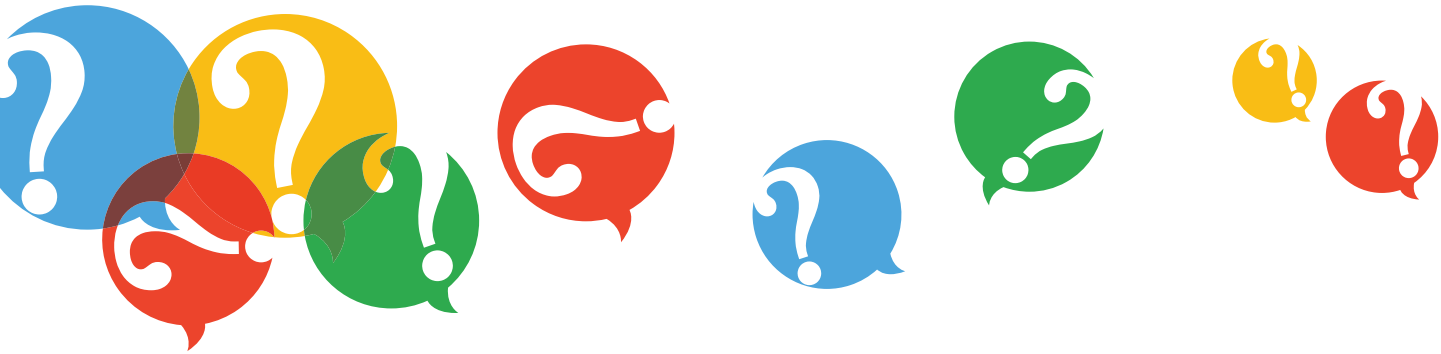
I Don't Know - just Google it:
The Impact of Digital Technology on Decision-making

by **Mark Goodridge & Toni Marshall**

The majority of us take our brain, and its capability, for granted. As we move through life we remain unaware of the internal processing that takes place just to allow us to remain conscious and are blissfully unaware of the decisions our brain makes for us as we breeze through life.

Despite the awe-inspiring capability of our brain, as the human environment continues to rapidly change, the capability of our brain to adapt and remain efficient comes into question. This time, the perceived threat is the "horror" that is Artificial Intelligence (AI). Self-learning machines that think far quicker and smarter than us. The irony is that our learning-hungry brain that allows us to make these incredible leaps in technology, has now created something that has the potential, in some people's opinion, to make our brains obsolete, especially when it comes to decision-making. The ability of our brain to interpret large amounts of new data along with previous knowledge to make effective decisions has been at the heart of our evolution. In the business world, our brain has created hierarchies based on experience and expertise - with the ability to make insightful decisions often being the underpinning key to power.

> "The fear is that if we continue to allow AI to make our decisions for us, will those areas of our brain associated with complex decision-making fail to strengthen and grow our capability?"



Will humans lose the ability to make complex decisions?

As the article by Merje Shaw describes, there are many examples in the modern workplace where machines are able to make complex decisions on our behalf. Such examples seem to be diminishing the decision-making tasks that would allow a natural hierarchy and development opportunuties to be created in an organisation. These progressions beg the question: ***what will be the impact on our future capability to make complex decisions and should we worry about this?***

From a neurobiological perspective, we know that the more we do something, the better we get at it. Each activity we repeat strengthens the connections in the associated areas of the brain that enables the particular activity. This goes as far as to create physical differences in our brains. The classic example being that of London Black Cab drivers who typically have an enlarged posterior hippocampus (associated with memory, particularly special memory) that enables navigation (1). The same can be found in musicians, whose brain regions are enlarged in areas associated with their dominant hands (2).

A similar negative effect can be seen when we no longer utilise areas of our brain - essentially 'if we don't use it, we lose it'. A study at The University of Central London (UCL) in 2016/2017 highlighted the impact of Satellite Navigation on brain function (3). The research concluded that we lose the activation of our hippocampus and prefrontal cortex (the area of the brain associated with decision-making) when using satellite navigation, versus attempting to direct ourselves autonomously. The fear is that if we continue to allow AI to make our decisions for us, ***will those areas of our brain associated with complex decision-making fail to strengthen and grow our capability?***

In addition, the decisions that AI makes are algorithms designed to be failure proof (as one would expect). But as we know, humans learn through failure. Many well-known successful leaders are quoted as attributing their success to many prior failures and we continuously encourage our employees to celebrate failure as a learning experience, building our success in the future. The technology that enables AI was ultimately developed by learning from failure and creating improvements. Without these failures, how will we learn and develop further?

And it's not just AI that may be limiting the opportunity for us to strengthen our brains. James Williams of the Oxford Institute talks about the 'attention economy' that social media is taking us towards (4). Our lives are now dominated by others all fighting to get our attention so that we react - and react instantly. This is what Kahneman calls 'thinking fast' (5). Great for revealing our instincts and the heuristics that we all develop about how the world works, but really poor for 'thinking slow' which requires cool, considered evidence, time to weigh up the pros and cons and thoughtful problem-solving. If we're not careful we become overwhelmed by reacting to those who want to get your instant attention and loose our ability to think slow.

Artificial development of Decision-Making Capability

As technological advance and changes in our working environment reduce the natural development of decision-making capability, it falls to leaders to design purposeful developmental practices to ensure that effective decision-making capability is maintained in the key roles of any business.

Continued overleaf...

> If we're not careful we become overwhelmed by reacting to those who want to get your instant attention and loose our ability to think slow.

At OE Cam we work with the 'Decision Band Complex'. (see diagram1). This helps us frame and describe jobs, remuneration and development pathways. It also helps us think about the impact of AI. Artificial Intelligence erodes human work from the bottom of the hierarchy. Tasks that require lower levels of decision making go first. Higher up the hierarchy the complexity mushrooms and more 'slow thinking' is required, trade offs and judgements need to be made. The more we become players in this attention economy the less able we are to think slow.

The lower levels of decisions will increasingly be taken over by AI but the higher-level ones will remain. Views differ about whether they will all ultimately be taken over by AI: we think not. Professional firms are having to wrestle with the fact that much of the tedious work of auditing, searching for legal precedent and doing market research will increasingly be taken over by AI. So how will we train the professionals, develop their judgement and ultimately their professional wisdom if we're no longer able to learn the job from the bottom-up?

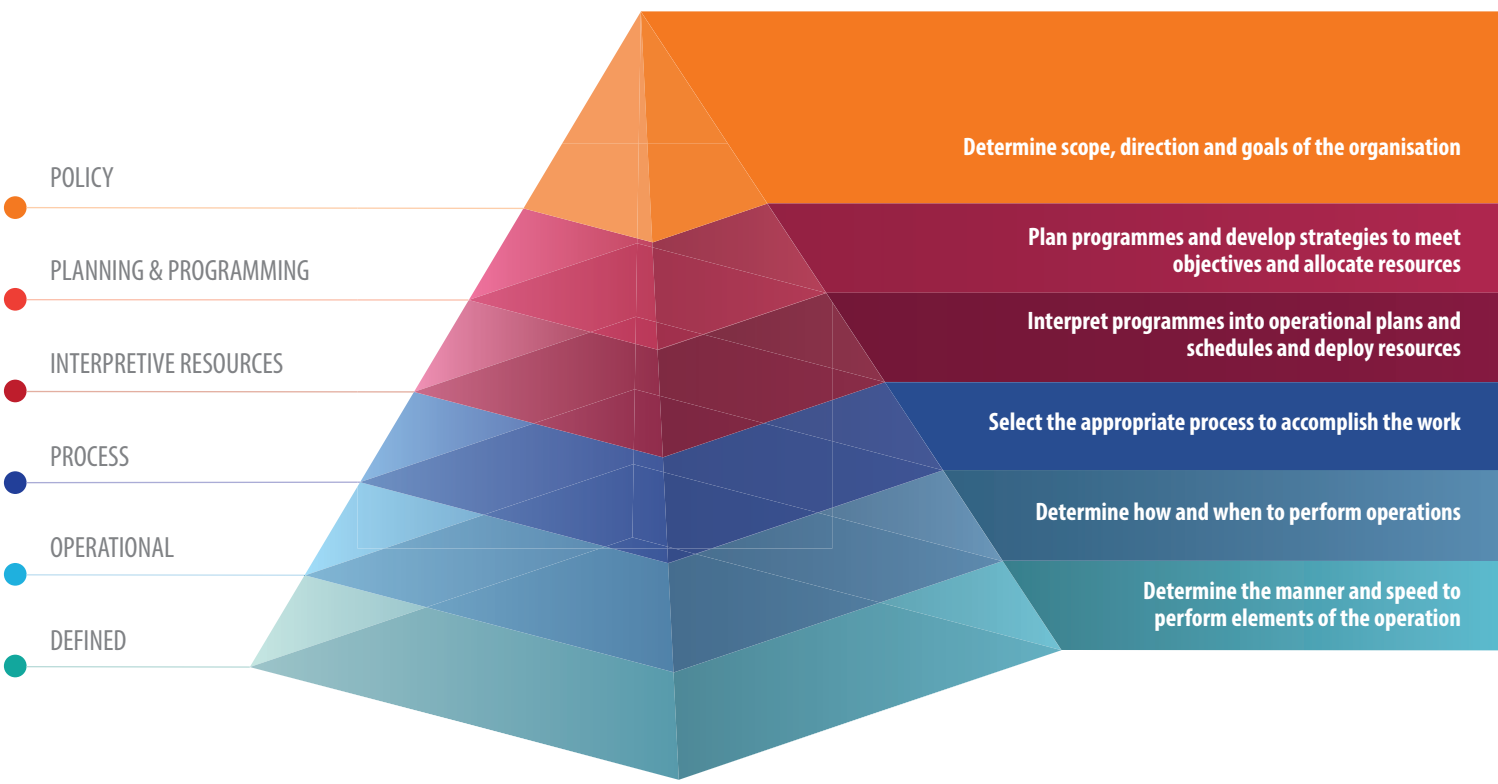


DIAGRAM 1: OE Cam's Decision Band Complex

> ...it falls to leaders to design purposeful developmental practices to ensure that effective decision-making capability is maintained in the key roles of any business.

What decision-making skills do we need to maintain?

Against all these pressures we need to help and develop managers to think slow, to think beyond reacting to all those that demand your attention. Problem-solving and decision-making skills are at the heart of 'thinking slow', being proactive (rather than reactive) and anticipating their environment effectively.

In addition, we need to better understand our cognitive biases, the way in which our brains assess risk and what is now dubbed 'behavioural economics' (of which some say Kahneman is the Father). For example, OE Cam delivers workshops on building awareness of implicit bias to help individuals understand the psychological forces behind their decision-making.

To learn more about how OE Cam can help improve decision-making, please see the box-out below.

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How OE Cam ensures effective Decision-Making in organisations:

Building decision-making through workshops

OE Cam use context relevant simulation exercises to build critical evaluation skills, alternatives and options to enhance breadth of thinking in leadership and other critical roles. Giving those involved the opportunity to fail in a safe and developmental focused environment, scope out options and practice flexible scenario planning.

Building diversity of thought

Using the OE Cam diversity framework, which focuses on effective organisational culture and collaborative techniques, we work with organisations to ensure diversity in the workplace. This ensures that learning from colleagues continues and that thinking is challenged, expanded and given depth via multiple differing perspectives.

Changing mind-sets

Using executive coaching, OE Cam works with leaders to change mind-sets and attitudes to ensure appropriate openness to failure and risk tolerance. Therefore learning through experience is continued, ensuring that failure is seen as an important aspect of development, via growth mind-sets and innovative aspirations.

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4. RSA Journal Oxford Internet Institute
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OE Cam

DELIVERING ORGANISATION EFFECTIVENESS

Organisation Effectiveness Cambridge (OE Cam LLP) is a specialist firm of business psychologists and consultants who maximise the effectiveness of individuals, teams and organisations.

We believe that organisational effectiveness can only be improved through tackling the 'hard' with the 'soft'. We view your organisation from multiple perspectives – the behavioural, the structural, the cultural and the economic so that we get to the essence of your challenge and deliver bespoke, feasible and sustainable solutions.

Our clients span industry sectors and international boundaries and include: AB Foods; AB Agri; BBC; Body Shop; City & Guilds; The Coal Authority; Coller Capital; Connect Group; Daiichi Sankyo; E.ON, Department of Health; Goodwood; Greene King; Internet Watch Foundation; Odeon Cinemas; Primark; PRS for Music; Ryder; Simmons & Simmons; SuperGroup; Terra Firma; Travis Perkins, University of Cambridge and Virgin Active.

We see organisation effectiveness as a combination of organisation development and talent management:

Talent Management

- **Executive Assessment** - we identify "disruptive talent" and deliver individual and team assessments to give you confidence to make strategic people investments, including succession planning, recruitment and pre/post M&A due diligence
- **Leadership Development** – we define and build leadership capability to deliver your strategy. We create learning experiences that impact the bottom line and facilitate executive teams for performance improvement and business growth
- **Executive Coaching** – we have considerable experience of coaching senior managers, often in quite sensitive situations. Through our work we know and understand the business environment, the cultures and the business pressures. This enables us to relate to demands and uncertainties often felt in post, across different sectors, disciplines and organisations
- **Performance Management** – we create the processes and skills for managers to set objectives and measures and ensure that feedback is constructive and that achievements are properly recognised and rewarded.

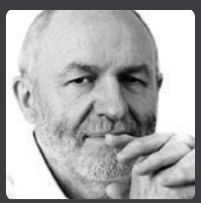
Organisation Development

- **Board Development** - we review and develop board effectiveness and work with executive teams on governance and organisational impact
- **Organisation Design** – we create aligned, accountable and agile organisations by assessing how coherent your organisation is now and developing options for where and how it can be improved
- **Organisation Improvement** - we analyse before delivering interventions that will make the business work as intended, build collaboration and communities whilst retaining accountability and performance. We work with teams to grow businesses, build your strategy, increase capability and implement change
- **Culture Audit and Development** - we change cultures to become more innovative, customer centric and performance orientated. Using both quantitative and qualitative tools we can assess organisational and leadership culture; compare and contrast cultural synergies, variances and determine the extent of cultural 'entropy'. We develop systems, processes and capability to deliver cultural change.

We are a boutique consultancy, which means that your experience with us will be a personal one. We will invest the effort to get to know you and your organisation to jointly deliver the outcome you are seeking. We are proud to be an employee-owned company.

For more information please visit **www.oecam.com** or call us on **+44 (0)1223 269009**.

Contributors



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Mark leads major transformation projects in both the private and public sectors leading to business realignment, organisation and culture change. He advises organisations at board level in the food, retail, media, telecommunications, and government sectors in the UK, Continental Europe and USA.
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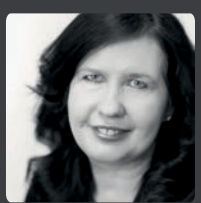

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Hazel is an experienced chartered Occupational Psychologist and leads OE Cam's Talent Management practice. She specialises in leadership development, change and business transformation; specifically senior level recruitment and development, team engagement and executive coaching. She has held both Non-Executive and Executive Board positions and is the co-founder of the British Psychological Society's Board effectiveness Group. She is a past Chair of the Division of Occupational Psychology and was the Deputy Chair of the Professional practice Board. She is the lead author on BPS white papers and government consultations and an international invited speaker.
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Toni Marshall
Toni is an Occupational Psychology postgraduate who brings particular focus on integrating current, commercially focused, research into her work with OE Cam. Toni carried out data collection and analysis for the current Innovation research and will be involved in the next upcoming Space Consulting research on digitalisation. At OE Cam, Toni focuses on individual and team development, particularly in feedback processes and creating business focused development events. She is an active member of the CIPD and the British Psychological Society (including Division of Occupational Psychology). She is also BPS Level A & B trained.
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As a Junior Business Psychologist Consultant, Mariam helps design and deliver training workshops, development centres and 360 degree feedback. Most recently, this has involved delivering sessions on understanding different working styles, personality preferences and leading in-tray exercises. Mariam also supports consulting projects such as developing competency frameworks in assessment and selection and conducting thematic analysis in leadership and development.

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Merje Shaw

Guest Contributor

Merje Shaw (pronounced 'Mer-i-yah') started her career at Skype in customer support in 2006 when it was a small start-up in Estonia. After four years, inspired by bringing about industry-shifting disruption and seeing first-hand how customer focus can grow and empower an organisation, Merje went on to work for some of London's leading digital agencies, working on large-scale digital transformation projects for clients such as BT, M&S and the Department for Work and Pensions.

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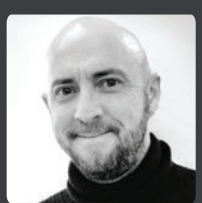

Mark Woods

Guest Contributor

Dr. Woods leads the Autonomy and Robotics group at SCISYS UK specialising in applications which enable autonomous exploration, survey or analysis of complex environments. He has over 20 years' experience as an innovator leading, researching, developing and commercialising Robotics, Autonomy, Computer Vision and Machine Learning Based Applications from low to fully operational (industrialised) Technology Readiness Levels. He has been the autonomy lead for a wide range of European Space Agency (ESA), EC, UK and commercially funded projects including ESA's ExoMars Rover which will be Europe's first contact Mars mission. More recently he has led cutting edge applications of autonomy, robotics and AI technology to the Utilities, Nuclear and other commercial sectors. He consults and presents often on the strategic and practical application of AI in complex environments.

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Explore the possibilities with us

It can be hard to visualise all the potential new (and better) ways of working when you are busy running the day-to-day business.

Why not let us help you explore the possibilities? Path59 and OE Cam can facilitate an innovation-themed workshop for your senior managers to understand the emerging technologies that are shaping the way we work and facilitate an inspiring discussion to help you think through implications for your business.

We can then support you in creating a practical vision for what's next when it comes to your own digital & AI transformation, and subsequently determine the options for your future operating model.

To define your company's future direction and how you will get there with OE Cam, please email one of the team using the addresses on the contributors page or telephone our Cambridge office on +44 (0) 1223 269009.

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